[redacted]

SAPC 17227
Copy / of 8

2 July 1957

MEMORANDUM FOR: Project Director

SUBJECT : System 1

1. The System 1 tape recorder varies in speed even when operating satisfactorily by as much as 7%. This variation is far greater than standard tape recorders and is an accepted result of the severe miniaturization of the recorder. This variation causes considerable increase in the difficulty and time required for analysis time since modulation frequency read-out is a function of tape speed. The "D" rack can not accept 7% variations.

2. The attached paper prepared by O/SI describes a system made up from standard boxes available commercially that can be used to correct the speed during the duping process to better than 1%. This is adequate for analysis purposes and for the "D" rack.

3. It is necessary to add this equipment to each A-B_1-B_2 combination in order to correct the speeds erroneously produced by the System 1 recorder. This system will also correct any error that may show up in the System IV and V recorders.

5 A$B_1$$B_2$ systems (#3) A C+G

4. This equipment will cost the Agency $10,000 since ~~A-B1-B2~~ racks ~~systems~~ are involved.

(K)

5. This system is hand-controlled, which experience shows is adequate. A simple automatic control could have been developed, but would have cost more, taken more time and been less dependable.

Reduced to three units for project by ... on July 16

25X1A
[redacted]
ELINT Staff Officer

25X1A [redacted] ... wait up instructions for the field for ... people to make this work.

Distribution:
Copy 1 - Project Director (w/att)
2 - Mr. Reber (w/o att)
3 - [redacted] (w/o att)
4 - [redacted] (w/o att)
5 - O/SI
Copies 6 and 7 - ESO
8 - Project Chron (w/o att)

25X1A 25X1A 25X1A 25X1A

[redacted]

25X1A [redacted] LSK

Approved by Mr. Bissell in talks with [redacted] July 12, 1957 [redacted] discuss with [redacted] ... necessary approval ... have ... in the field unit. Coordinate with Torella (K) 7/2...

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CLASS. CHANGED TO: TS S C
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DATE: 11/01/82 REVIEWER: ...

SECRET

SPEED CORRECTION OF MAGNETIC TAPES

1. The success of the p.r.f. indicator presently being considered to replace the "D" Rack depends upon proper tape speed inasmuch as the pass bands of the instrument are designed to accept signals from certain radars and to reject those which lie outside a pre-determined band. A tape running at incorrect speed may cause the p.r.f. of a known radar to lie outside the acceptance band of the proper filter. A method of correcting the tape speed is described below. This method utilizes existing commercial equipment.

2. The equipment necessary to incorporate this method of speed correction is as follows:

a.	1000 cycle band pass filter, GR Type 830-R	$ 40.00
b.	Ampex 60-cycle generator, Model 375, variable frequency	660.00
c.	Audio Oscillator HP Type 200-CD	150.00
d.	Electronic Counter HP Type 522-B	915.00
e.	Voltage Amplifier - HP Type 450-A	140.00
f.	Relay Rack Cabinet - five ft.	100.00

3. The total cost of these items is $2005.

4. Channel No. 1 containing the 1000 cycle calibration frequency is fed through the 1000 cycle filter and the voltage amplifier to the electronic counter as shown on the attached diagram. The counter is set for a standard gate time of one second so that at proper tape speed a count of 1000 will be indicated. The tape speed is adjusted by varying the frequency of the audio oscillator which is fed through the Ampex 60-cycle generator to the tape transport mechanism.

5. Accuracies as low as 0.2% have been experienced over an eight-hour period using this method of speed control.